

Federal Funding for Wildfire Control and Management

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Summary

The Forest Service (FS) and the Department of the Interior (DOI) are responsible for protecting most federal lands from wildfires. Wildfire appropriations nearly doubled in FY2001, following a severe fire season in the summer of 2000, and have remained at relatively high levels. Acres burned annually have also increased over the past 50 years, with the six highest annual totals occurring since 2000. Many in Congress are concerned that wildfire costs are spiraling upward without a reduction in damages. With emergency supplemental funding, FY2008 wildfire funding reached a record high of \$4.46 billion.

There are three basic categories of federal programs for wildfire: federal lands protection, non-federal lands protection, and other fire-related expenditures. The vast majority (about 95%) of federal wildfire funds are spent to protect federal lands—for fire preparedness (equipment, baseline personnel, and training); fire suppression operations (including emergency funding); post-fire rehabilitation (to help sites recover after the wildfire); and fuel reduction (to reduce wildfire damages by reducing fuel levels). Since FY2001, FS fire appropriations have included funds for state fire assistance, volunteer fire assistance, and forest health management, as well as for community assistance, fire research, and fire facilities.

Four issues have dominated wildfire funding debates. One is the high cost of fire management and its effects on other agency programs. Several studies have recommended actions to try to control wildfire costs, and the agencies have taken various steps, but it is unclear whether these actions will be sufficient. Wildfire suppression expenditures have exceeded agency appropriations annually for more than a decade. Borrowing to pay high wildfire suppression costs has affected other agency programs. The Federal Land Assistance, Management, and Enhancement (FLAME) Act of 2009 was enacted in P.L. 111-88 to insulate other agency programs from high wildfire suppression costs by creating a separate funding structure for emergency supplemental wildfire suppression efforts.

Another issue is funding for fuel reduction. Funding and acres treated rose (roughly doubling) between FY2000 and FY2003, and have stabilized since. Currently about 3 million acres, less than 1% of federal lands, are treated annually. However, 75 million acres of federal land are at high risk, and another 156 million acres are at moderate risk, of ecological damage from catastrophic wildfire. Since many ecosystems need to be treated on a 10-35 year cycle (depending on the ecosystem), current treatment rates are insufficient to address the problem. A third issue is the federal role in protecting non-federal lands, communities, and private structures. In 1994, federal firefighting resources were apparently used to protect private residences at a cost to federal lands and resources in one severe fire. A federal policy review recommended increased state and local efforts to match their responsibilities, but federal programs to protect non-federal lands have also expanded, reducing incentives for local participation in fire protection.

Finally, post-fire rehabilitation is raising concerns. Agency regulations and legislation in the 109th Congress focused on expediting such activities, but opponents expressed concerns that this would restrict environmental review of and public involvement in salvage logging decisions, leading to greater environmental damage. Legislation was introduced but not enacted in the 110th Congress to provide alternative means of addressing post-fire restoration in particular areas. The large wildfires to date in 2011 have reignited concerns about post-fire rehabilitation. Except for appropriations, legislative action regarding this issue since the 110th Congress has been minimal.

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Severe fire seasons in the past decade have prompted substantial debate and proposals related to fire protection programs and funding. President Clinton proposed a new National Fire Plan in 2000 to increase funding to protect federal, state, and private lands; Congress largely enacted this request. The severe 2002 fire season led President Bush to propose a Healthy Forests Initiative to expedite fuel reduction on federal lands. In 2003, Congress enacted the Healthy Forests Restoration Act to expedite fuel reduction on federal lands and to authorize other forest protection programs. In 2009, Congress enacted the Federal Land Assistance, Management, and Enhancement (FLAME) Act (P.L. 111-88) to insulate other agency programs from high wildfire suppression costs.

Wildfire funding has continued at relatively high levels since 2000, and now constitutes a substantial portion of land management agency budgets. Severe fire seasons seem to have become more common since 2000. (See **Figure 1.**) Total wildfire funding for FY2008 was a record high of \$4.46 billion. The high costs of firefighting continue to attract attention.

Fire Seasons and Fiscal Years

Wildfire data can be confusing because fire seasons and fiscal years rarely match. Fire seasons begin in spring and may run through November. Emergency funding is often enacted after the fire season is nearly complete. Thus, wildfire control funding is commonly high in the fiscal year following a severe fire season. The severe 2000 fire season, for example, led to much higher appropriations for wildfire in FY2001.

This report briefly describes the three categories of federal programs for wildfire protection. One category involves protection of the federal lands managed by the U.S. Department of Agriculture's Forest Service (FS), and by the U.S. Department of the Interior (DOI), whose wildfire programs traditionally were funded through the Bureau of Land Management (BLM) but are now a department-wide funding item. A second category addresses protection of non-federal lands through programs to assist state and local governments and communities; these programs can be used by the state and local governments to reduce wildland fuels, to otherwise prepare for fire control, to contain and control wildfires, and to respond after severe wildfires have burned. A third category of federal programs supports fire research, fire facilities, and improvements in forest health. The last section of this report discusses issues associated with the high wildfire costs, including pending legislation.

Background

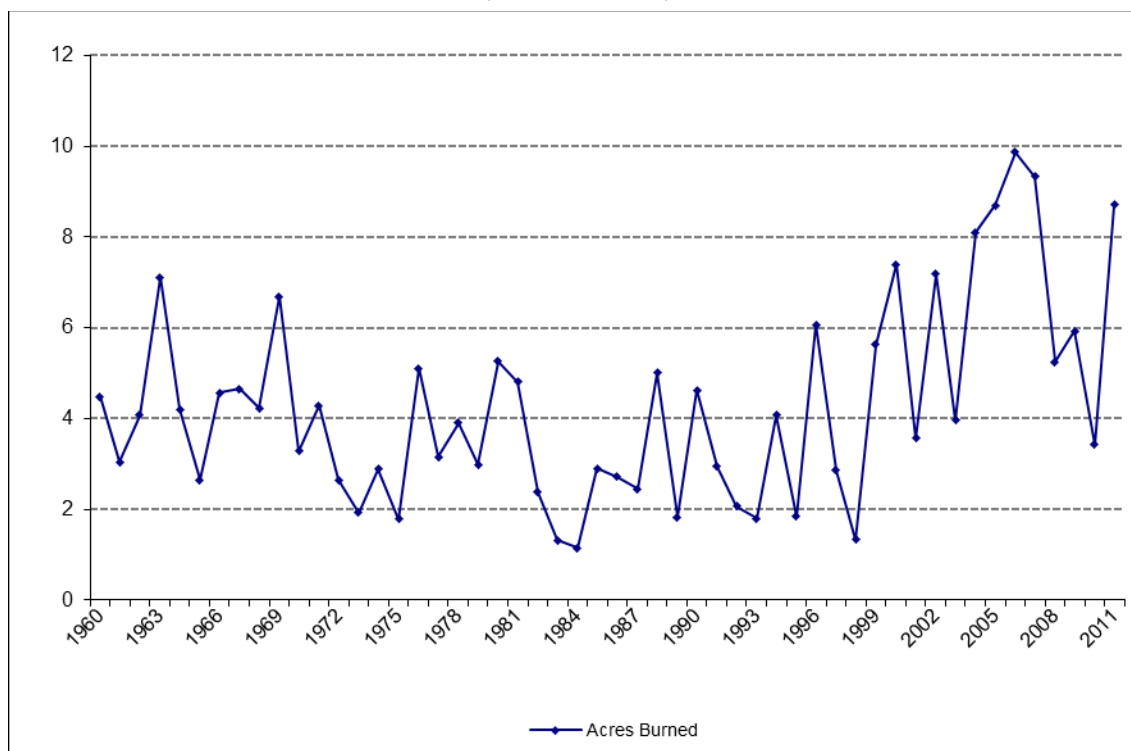
The FS was created in 1905 with the merger of the USDA Bureau of Forestry (which conducted research and provided technical assistance to states and private landowners) and the Forestry Division of the General Land Office (a predecessor of the BLM). An early focus was on halting wildfires in the national forests following several large fires that burned nearly 5 million acres in Montana and Idaho in 1910.¹ Efforts to control wildfires were founded on a belief that fast, aggressive control was efficient, because fires that were stopped while small would not become the large, destructive conflagrations that are so expensive to control. The goals were to protect human lives, then private property, then natural resources. In 1926, the agency developed its *10-acre policy*—that all wildfires should be controlled before they reached 10 acres in size—clearly aimed at keeping wildfires small.² Then, in 1935, the FS added its *10:00 a.m. policy*—that, for

¹ Stephen J. Pyne, "Keynote Address," in *The Fires Next Time: Transcript* (Boise, ID: Andrus Center for Public Policy, 2001), pp. 2-7.

² See Julie K. Gorte and Ross W. Gorte, *Application of Economic Techniques to Fire Management—A Status Review and Evaluation*, Gen. Tech. Rept. INT-53 (Ogden, UT: USDA Forest Service, June 1979).

fires exceeding 10 acres, efforts should focus on control before the next burning period began (at 10:00 a.m.). Under the 10:00 a.m. policy, the goal in suppressing large fires is to gain control during the relatively cool and calm conditions of night and early morning, rather than spending major efforts during the heat of the day.

Figure 1. Acres Burned Annually
(millions of acres)



Source: National Interagency Fire Center, at http://www.nifc.gov/fireInfo/fireInfo_stats_totalFires.html. Note that data for 1983-1991 have been revised downward.

Note: Data are shown in the **Appendix**.

In the 1970s, these aggressive FS fire control policies began to be questioned. Research had documented that, in some situations, wildfires brought ecological benefits to the burned areas—aiding regeneration of native flora, improving the habitat of native fauna, and reducing infestations of pests and of exotic and invasive species. The Office of Management and Budget (OMB) challenged proposed budget increases based on FS policies, and a subsequent study suggested that the fire control policies would increase expenditures beyond efficient levels.³

Following the 1988 fires in Yellowstone,⁴ concerns were raised about unnaturally high fuel loads leading to catastrophic fires and spiraling suppression costs. Congress established the National Commission on Wildfire Disasters, whose 1994 report described a situation of dangerously high

³ Stephen J. Pyne, *Fire In America: A Cultural History of Wildland and Rural Fire* (Princeton NJ: Princeton University Press, 1982), pp. 293-294.

⁴ Some have noted that the 1988 fires were the first severe fires to be broadcast on national media, thus drawing the attention of a much larger audience to the challenges associated with wildfire management.

fuel accumulations.⁵ The summer of 1994 was another severe fire season, leading to more calls for action to prevent future severe fire seasons. In addition to the concerns about fuel loads, concerns were voiced that, in a fire in Washington in 1994, federal firefighting resources had been diverted from protecting federal lands and resources to protecting nearby private residences and communities.⁶ The Clinton Administration directed a review of federal fire policy, and the agencies released the new *Federal Wildland Fire Management Policy & Program Review: Final Report* in December 1995.⁷ The report recommended altering federal fire policy from priority for private property to equal priority for private property and federal resources, based on values at risk. (Protecting human life is the first priority in firefighting.) The recommended change became effective after the report was accepted by the Secretaries of Agriculture and the Interior.

Concerns about wildfire threats persist. In 1999, the General Accounting Office (GAO, now the Government Accountability Office) issued two reports recommending a cohesive wildfire protection strategy for the FS and a combined strategy for the FS and BLM to address certain firefighting weaknesses.⁸ GAO reiterated the need for a cohesive strategy in 2009.⁹ To address the severe 2000 fire season, the Clinton Administration developed the National Fire Plan and a supplemental budget request. Congress enacted this additional funding in the FY2001 Interior appropriations act, and has since largely maintained the higher funding. (See **Figure 2** and **Table A-2**.) During the severe 2002 fire season, the Bush Administration developed the Healthy Forests Initiative to expedite fuel reduction projects in priority areas through administrative and legislative changes. Some elements of the initiative have been addressed through regulatory changes; others were addressed in the Healthy Forests Restoration Act of 2003 (P.L. 108-148).

Funding Levels

Wildfire management appropriations have risen over the past 15 years, as shown in **Figure 2**. The tables below present data on funding for the three categories of federal fire programs—protection of federal lands (**Table 1** and **Table 2**); assistance for protection of non-federal lands (**Table 3** and **Table 4**); and other fire-related expenditures (also **Table 3** and **Table 4**). The FS and DOI use three fire appropriation accounts—preparedness, suppression operations, and other operations—to fund most federal fire programs. However, the agencies include different activities in the accounts (e.g., the BLM historically included fire research and fire facility funding in the preparedness account), and the accounts change over time (e.g., the agencies split operations funding into suppression and other operations in 2001). Thus, the data, taken from the agency

⁵ R. Neil Sampson, chair, *Report of the National Commission on Wildfire Disasters* (Washington, DC: 1994).

⁶ Bob Armstrong, Assistant Secretary for Lands and Minerals Management, U.S. Dept. of the Interior, “Statement,” *Fire Policy and Related Forest Health Issues*, joint oversight hearing, House Committees on Resources and on Agriculture, October 4, 1994 (Washington, DC: U.S. GPO, 1995), p. 9. Serials No. 103-119 (Committee on Resources) and 103-82 (Committee on Agriculture).

⁷ Report available at http://www.nwcg.gov/branches/ppm/fpc/archives/fire_policy/mission/1995_fed_wildland_fire_policy_program_report.pdf.

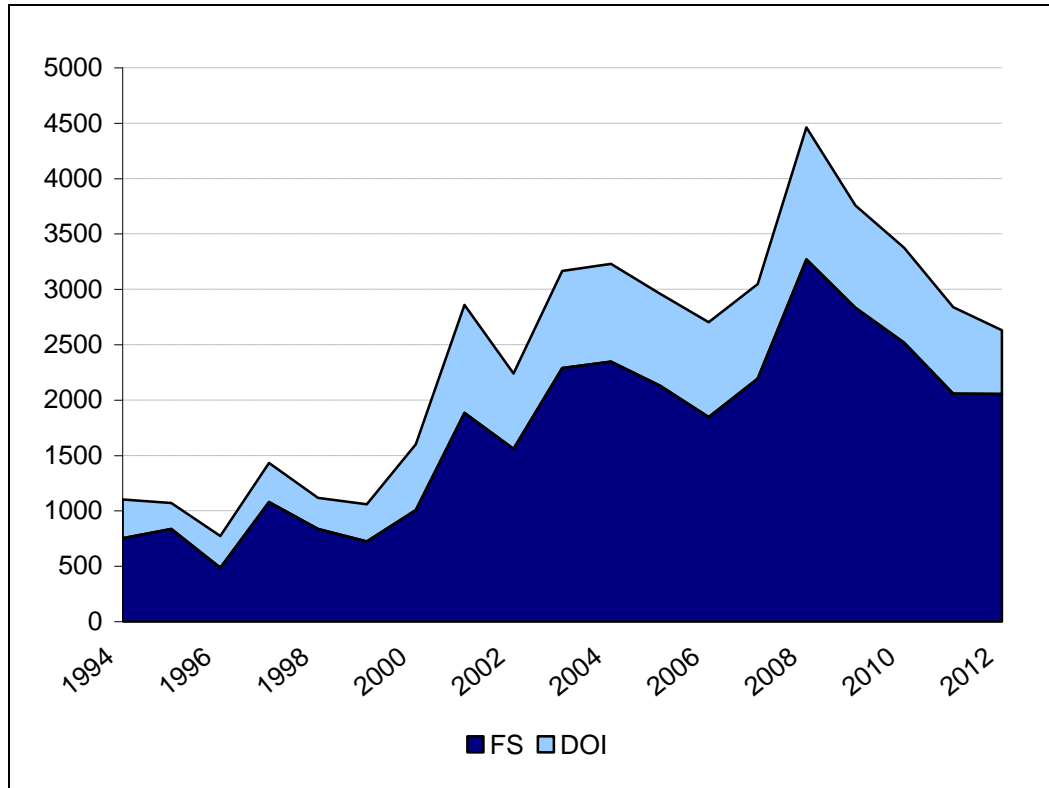
⁸ GAO, *Western National Forests: A Cohesive Strategy Is Needed to Address Catastrophic Wildfire Threats*, GAO/RCED-99-65 (Washington, DC: April 1999), hereinafter cited as GAO, *Cohesive Strategy Needed*; and GAO, *Federal Wildfire Activities: Current Strategy and Issues Needing Attention*, GAO/RCED-99-233 (Washington, DC: August 1999). GAO has released numerous reports about wildland fire management, including updates to the aforementioned reports: GAO, *Update on Federal Agency Efforts to Develop a Cohesive Strategy to Address Wildland Fire Threats*, GAO-06-671R (May 2006); and GAO, *Important Progress Has Been Made, but Challenges Remain to Completing a Cohesive Strategy*, GAO-05-147 (January 2005).

⁹ GAO, *Wildland Fire Management: Federal Agencies Have Taken Important Steps Forward, but Additional, Strategic Action Is Needed to Capitalize on Those Steps*, GAO-09-877 (September 9, 2009), <http://www.gao.gov/new.items/d09877.pdf>.

budget justifications for the National Fire Plan, have been rearranged in this report to present consistent data and trends on the three categories of federal wildfire programs since 1999.

Figure 2. Wildland Fire Management Appropriations, 1994-2012

(millions of dollars)



Source: FS, DOI, and BLM annual budget justifications.

Note: Data are shown in the **Appendix**. Data are not adjusted for inflation.

Federal Lands

Many wildfire management funds are used to protect federal lands. **Table 1** shows wildfire management appropriations for FY1999-FY2007; more recent data are shown in **Table 2**. The data in these tables exclude funding for the other two categories of federal wildfire funding—assistance to state and local governments, communities, and private landowners; and other fire-related activities (research, fire facility maintenance, forest health improvement, etc.). Federal funding to protect federal lands differs from federal funding to protect non-federal lands primarily in that the funding is predetermined to assist with certain efforts, such as suppression or preparedness. Federal funding for non-federal lands tends to give the states and other entities substantial discretion on how the funds will be used.

Table 1. Historic Wildfire Funding to Protect Federal Lands, FY1999-FY2007

(\$ in millions)

	FY1999	FY2000	FY2001	FY2002	FY2003	FY2004	FY2005	FY2006	FY2007
Forest Service	722.4	1,008.0	1,702.4	1,415.6	2,162.7	2,233.2	2,026.2	1,737.2	2,074.3
<i>Preparedness</i>	374.8	408.8	611.1	622.6	612.0	671.6	676.5	660.7	655.4
<i>Suppression</i>	180.6	139.2	319.3	255.3	418.0	597.1	648.9	690.2	741.5
<i>Emergency Funds^a</i>	102.0	390.0	425.1	266.0	889.0	699.2	395.5	100.0	370.0
<i>Site Rehabilitation</i>	0.0	0.0	141.7	62.7	7.1	6.9	12.8	6.2	6.2
<i>Fuel Reduction</i>	65.0	70.0	205.2	209.0	236.6	258.3	292.5	280.1	301.3
DOI	327.9	577.7	929.1	640.6	845.0	853.6	801.3	831.8	841.6
<i>Preparedness^b</i>	147.9	152.6	276.7	253.0	255.2	254.2	258.9	268.8	274.8
<i>Suppression</i>	96.2	158.1	153.1	127.4	159.3	192.9	218.4	230.7	249.2
<i>Emergency Funds^a</i>	50.0	200.0	199.6	54.0	225.0	198.4	98.6	100.0	95.0
<i>Site Rehabilitation</i>	0.0 ^c	20.0	104.8	20.0	19.9	24.2	23.9	24.1	22.8
<i>Fuel Reduction</i>	33.8 ^d	47.0	195.0	186.2	185.6	183.9	201.4	208.1	199.8
Total	1,050.3	1,585.6	2,631.5	2,056.3	3,007.6	3,086.8	2,827.5	2,569.0	2,915.9
<i>Preparedness</i>	522.7	561.3	887.9	875.7	867.2	925.8	935.4	929.5	930.2
<i>Suppression</i>	276.8	297.3	472.4	382.7	577.3	790.0	867.3	920.9	990.7
<i>Emergency Funds^a</i>	152.0	590.0	624.6	320.0	1,114.0	897.6	494.1	200.0	465.0
<i>Site Rehabilitation</i>	0.0	20.0	246.6	82.7	26.9	31.1	36.8	30.3	29.0
<i>Fuel Reduction</i>	98.8	117.0	400.1	395.2	422.3	442.2	493.9	488.2	501.0

Source: Annual agency budget justifications.

- Excludes emergency funds provided for other specified activities, such as site rehabilitation, fuel reduction, or state assistance.
- Excludes joint fire science research and facilities funding enacted within the BLM preparedness account through FY2004
- Unidentified amount included in suppression funding.
- Calculated at 26% of wildfire operations (see page IV-36 of the FY2001 BLM budget justification).

Table 2. Recent Wildfire Funding to Protect Federal Lands, FY2008-Present
(\$ in millions)

	FY2008 Actual	FY2009 Total^a	FY2010 Actual^b	FY2011 Actual^c	FY2012 Enacted^d
Forest Service	3,003.4	2,453.5	2,367.4	2,058.5	2,053.5
<i>Preparedness</i>	690.8	675.0	675.0	673.7	1,006.1
<i>Suppression</i>	845.6	993.9	997.5	995.5	538.7
<i>Emergency Funds^f</i>	932.0	200.0	413.0	90.4	315.9
<i>Site Rehabilitation</i>	110.8	11.5	11.6	11.5	0.0
<i>Fuel Reduction^g</i>	410.1	584.6	345.3	344.6	312.6
DOI	1,174.1	905.3	836.8	778.9	576.5
<i>Preparedness</i>	276.5	281.8	290.5	290.5	277.0
<i>Suppression</i>	289.8	335.2	383.8	399.0	270.6
<i>Emergency Funds^f</i>	343.0	50.0	61.0	60.9	92.0
<i>Site Rehabilitation</i>	55.2	20.3	20.3	33.2	13.0
<i>Fuel Reduction</i>	209.6	218.1	206.2	183.3	183.3
Total	4,177.5	3,358.8	3,442.6	2,837.4	2,630.0
<i>Preparedness</i>	967.3	956.8	965.5	964.1	1,283.0
<i>Suppression</i>	1,135.4	1,329.1	1,381.3	1,394.5	809.3
<i>Emergency Funds^f</i>	1,275.0	250.0	494.0	151.3	407.9
<i>Site Rehabilitation</i>	166.0	31.8	31.9	44.7	13.0
<i>Fuel Reduction</i>	619.7	791.1	551.5	527.9	495.9

Source: Annual agency budget justifications and conference agreements on P.L. 110-116, P.L. 110-161, P.L. 110-329, P.L. 111-5, P.L. 111-8, P.L. 111-88, and P.L. 112-74.

- a. Includes funding in P.L. 111-8 and P.L. 111-32 as well as in P.L. 111-5, the American Recovery and Reinvestment Act of 2009 (ARRA). ARRA funds were available for use in FY2009 or FY2010.
- b. Totals reflect savings of \$75.0 million from FS use of prior-year funds and \$125.0 million from BLM use of prior-year funds.
- c. Reflects across-the-board 0.2% reduction as well as rescissions of \$200.0 million from FS wildland fire management appropriations, \$200.0 million from FS FLAME fund appropriations, and \$200.0 million from DOI wildland fire management appropriations.
- d. Data provided do not reflect the across-the-board rescission of 0.16% for FY2012.
- e. Reflects a rescission of \$192 million from FS wildland fire management appropriations.
- f. Since FY2010, reflects appropriations to (and rescissions from) the FLAME funds. Excludes emergency funds provided for other specified activities, such as site rehabilitation, fuel reduction, or state assistance.
- g. Excludes funds used for biomass grants (\$5.0 million annually, FY2009-FY2012), Community Wood Energy Program (\$5.0 million in FY2011), and Forest Biomass for Energy Program (\$15.0 million in FY2011). These funds could be used for energy from federal land biomass, but could also be used for energy from non-federal land biomass. Thus, the funds are listed below under assistance programs.
- h. Reflects data reported by the House Appropriations Subcommittee on Interior, Environment, and Related Agencies; the FS FY2012 budget justification shows \$254.0 million and notes that fuel reduction on lands not in the Wildland-Urban Interface will be funded from a new National Forest System line item for Integrated Resource Restoration.

The BLM included funds for fire research and fire facilities under its preparedness budget line item through FY2004; these funds have been excluded from **Table 1**. The tables show appropriations by fiscal year, with emergency funding identified for the year in which it was provided, rather than in the year it was spent. The agencies traditionally were authorized to borrow from other accounts for fire suppression, and emergency funds generally repay these borrowings. The tables show that total federal land fire management appropriations rose substantially in FY2001 and have since remained relatively high, with fluctuations generally depending on the severity of the fire season in the preceding calendar year.

Preparedness

Fire preparedness appropriations provide funding for fire prevention and detection as well as for equipment, training, and baseline personnel. Preparedness funding rose substantially (58%) in FY2001 from the prior year, with DOI funding rising more (81%) than FS funding (49%). In FY2004, preparedness funding rose by a lesser amount (7%), with the rise entirely in FS preparedness. (DOI preparedness funding declined slightly.) Funding was relatively stable for FY2004 through FY2011. However, for FY2012, the appropriations law provided a substantial (\$332 million, 49%) increase in FS preparedness, and a modest (\$14 million, 5%) decline in DOI preparedness. The budget overview notes that the increase in FS preparedness (and roughly comparable decline in suppression funding) stems from a realignment of various preparedness costs that were shifted to the suppression account over the previous several fiscal years.

Suppression and Emergency Funds

Funds for fighting wildfires—appropriations for fire suppression and supplemental, contingency, or emergency funds—have fluctuated widely over the past decade, from less than \$430 million in FY1999 to \$2.41 billion in FY2008. Some of the variation results from differences in the severity of the fire season in the preceding year, particularly for supplemental and emergency funding. Such fluctuations have long been part of the agencies' funding; for example, total appropriations in FY1997 were double the FY1996 levels owing to a severe season in the summer of 1996. Appropriations for fire suppression rose steadily and sharply for both agencies from FY2002 through FY2008, then stabilized through FY2011. The FY2012 appropriations law substantially reduced suppression appropriations—down \$457 million (46%) for FS fire suppression and \$128 million (32%) for DOI fire suppression. However, this was offset by increases in supplemental, contingency, and emergency funds (including FLAME funds; see below).

Title V of the FY2010 Interior, Environment, and Related Agencies Appropriations Act (P.L. 111-88) was the Federal Land Assistance, Management, and Enhancement (FLAME) Act. This title established FLAME Wildfire Suppression Reserve Accounts for the FS and DOI, to be funded from annual appropriations. The FLAME funds can be used if the Secretary declares that (1) an individual wildfire covers at least 300 acres or threatens lives, property, or resources, or (2) cumulative wildfire suppression and emergency response costs will exceed, within 30 days, appropriations for wildfire suppression and emergency responses. FLAME funds allow both FS and DOI to pull from a reserve account to continue routine wildfire suppression and protection efforts if funds from other accounts are depleted. The FY2010 act also included \$413 million for the FS FLAME fund and \$61 million for the DOI FLAME fund. For FY2011, FLAME fund appropriations were much lower for the FS—\$90 million (including the \$200 million rescission)—while being stable for DOI. For FY2012, the appropriations law included \$316 million for the FS FLAME fund and \$92 million for the DOI FLAME fund.

The sum total of these accounts for wildfire suppression for FY2012 was less than the total funds available for wildfire suppression in FY2010 or FY2011. For the FS, the request totaled \$855

million (\$539 million in the suppression account, \$316 million in the FLAME fund); this is \$231 million (21%) less than the FY2011 funding total of \$1.09 billion, and \$556 million (39%) less than the FY2010 funding total of \$1.41 billion. For DOI, the request totaled \$363 million (\$271 million in the suppression account, \$92 million in the FLAME fund); this is \$97 million (21%) less than the FY2011 funding total of \$460 million, and \$82 million (18%) less than the FY2010 funding total of \$445 million.

Post-Fire Rehabilitation

Wildfire appropriations for rehabilitating burned areas have been relatively stable, except in a few fiscal years. Most wildfire site rehabilitation funds have gone to the BLM for treating burned DOI lands.¹⁰ Except for a fivefold increase for FY2001 and a doubling in FY2008, DOI site rehabilitation funds generally have ranged between \$20 and \$25 million annually since FY2000. The FY2012 appropriations law provides \$13 million for DOI site rehabilitation funding, a decrease of \$20 million (61%) from FY2011.

The FS generally receives few wildfire funds for site rehabilitation (none prior to FY2001), and instead uses funds appropriated to other accounts, such as watershed improvement and vegetation management. However, the FS was appropriated \$142 million of wildfire funds for site rehabilitation in FY2001, \$63 million in FY2002, and \$111 million in FY2008 (including \$100 million in emergency supplemental funding). These three years account for 81% of FS wildfire appropriations for site rehabilitation since FY2000. For FY2012, no funding was provided for FS site rehabilitation.

Fuel Reduction¹¹

Fuel reduction funding is intended to protect lands and resources from wildfire damages by lowering the fuel loads on federal lands, and thus making the fires less intense and more controllable. Total fuel reduction funding more than tripled in FY2001. Fuel reduction funding rose slowly from FY2001 through FY2007. Funding rose substantially (24%) in FY2008 and again in FY2009 (another 28%), owing to funding in the economic stimulus, P.L. 111-5 (the American Recovery and Reinvestment Act of 2009). For FY2010, the appropriations declined substantially (41% for the FS and 5% for DOI), and FY2011 appropriations were lower still (down slightly for the FS and down another 11% for DOI).

The FY2012 appropriations law brought further declines. DOI fuel reduction funding for FY2012 was \$157 million, 14% below FY2011, which was the lowest level since FY2000. For the FS, fuel reduction funding for FY2012 is \$57 million.¹² The FS proposed shifting fuel reduction funding for areas outside the Wildland-Urban Interface (WUI) into a new line item within the National Forest System account—Integrated Resource Restoration—along with funding from several other line items. The FY2012 appropriations law directs both the FS and DOI to remove the requirement that 75% and 90%, respectively, of hazardous fuels funding be spent in the WUI; instead, funds are to be spent on the highest-priority projects in the highest-priority areas.¹³

¹⁰ On federal lands, site rehabilitation routinely occurs as an emergency wildfire program and through regular land management activities. Activities include sowing areas with quick-growing grasses as well as planting trees and other activities to reduce erosion.

¹¹ See CRS Report R40811, *Wildfire Fuels and Fuel Reduction*, by Ross W. Gorte.

¹² This is the amount reported by the House Appropriations Subcommittee on Interior, Environment, and Related Agencies; the FS FY2012 budget justification shows \$254 million for this activity.

¹³ H.Rept. 112-331 on H.R. 2055, pp. 1068 and 1084.

Some FS fuel reduction funds have been used and proposed for wood energy programs. For FY2009-FY2012, \$5 million annually was used for biomass grants. In FY2010, \$10.0 million was used for the Collaborative Forest Landscape Restoration Fund, to be used in large part to restore national forest landscapes through fuel reduction, and thus is included in the fuel reduction funding in **Table 1**. (In FY2011, this program was funded within the National Forest System account, and was proposed to be included in the new Integrated Resource Restoration line item for FY2012.) These programs can contribute to fuel reduction for the national forests, since they provide markets for the fuels to be removed. However, they are not limited to woody biomass from national forests, and no allocation of funding between fuels from national forests and biomass from non-federal lands is specified. Thus, these programs are included below, under assistance for non-federal lands.

Assistance for Non-Federal Lands

States are responsible for fire protection of non-federal lands, except for lands protected by the federal agencies under cooperative agreements. The federal government, primarily through the FS, has a group of wildfire programs to provide assistance to states, local governments, and communities to protect non-federal (both government and private) lands from wildfire damages.

Most FS fire assistance programs are funded under the agency's State and Private Forestry (S&PF) branch.¹⁴ State fire assistance includes financial and technical help for fire prevention, fire control, and prescribed fire use for state foresters, and through them, for other agencies and organizations. In cooperation with the General Services Administration (GSA), the FS is encouraged to transfer "excess personal property" (equipment) from federal agencies to state and local firefighting forces. The FS also provides assistance directly to volunteer fire departments. Since FY2001, fire assistance funding also has come through wildfire appropriations. The economic stimulus legislation, P.L. 111-5, contained wildfire funds for state and private forestry activities, including fuel reduction, forest health improvement activities (discussed under "Other Fire Funding," below), and wood energy grants. In addition, the 2002 farm bill (P.L. 107-171) created a new community fire protection program, authorizing the FS to assist communities in protecting themselves from wildfires and to act on non-federal lands (with the consent of landowners) to assist in protecting structures and communities from wildfires. The 2008 farm bill (P.L. 110-246) created two biomass energy grant programs—the Community Wood Energy Program and the Forest Biomass for Energy Program.¹⁵ These subsidies may stimulate markets for fuel removed from non-federal lands for wildfire protection.

Wildfire funds have also been provided for economic assistance. For three years (FY2001-FY2003), FS wildfire appropriations were added to the S&PF Economic Action Program (EAP) for training and for loans to existing or new ventures to help local economies. In addition, in FY2001, the FS received fire funds to directly aid communities recovering from the severe fires in 2000. DOI also received funding to assist rural areas affected by wildfires for FY2001 through FY2010 (except for FY2007).

Total assistance funds for protecting non-federal lands increased substantially in FY2001, from \$27 million (all FS S&PF funds) to \$148 million. Funding dropped about 20% in FY2002 (to \$118 million) and fluctuated widely (by as much as 35% annually) through FY2007. Funding nearly tripled in FY2008, and jumped again (up another 42%) in FY2009. In FY2010, funding fell substantially (by 63%), to below the FY2001 level. Funding fell (by another 12%) in FY2011

¹⁴ For more details on these programs, see CRS Report RL31065, *Forestry Assistance Programs*, by Ross W. Gorte.

¹⁵ For more information on both programs, see CRS Report R41985, *Renewable Energy Programs and the Farm Bill: Status and Issues*, by Randy Schnepf.

and continued the downward trend in FY2012, falling by another 12%. Funding for assistance programs is shown in **Table 3** and **Table 4**. There appear to be multiple reasons for the fluctuations over time; no one theme explains them.

Wildfire funds for assistance programs were enacted initially in FY2001, and have been maintained for FS state and volunteer assistance programs. For FY2008, some of the emergency funds provided for FS fuel reduction (in P.L. 110-116 and in P.L. 110-329) were directed to fuel reduction on non-federal lands; these funds have been included in state fire assistance in **Table 4**, and excluded from **Table 2**. FS wildfire funding for state fire assistance more than quadrupled in FY2008, and rose another 50% in FY2009, with funding in the economic stimulus. Funding declined substantially (by 74%) in FY2010, fell further (by 9%) in FY2011, and declined again (by 14%) in FY2012.

FS community assistance to aid communities affected by fires in the summer of 2000 was a one-time appropriation, and FS EAP funds from wildfire appropriations were enacted for only three years. Appropriations for DOI rural assistance were provided annually from FY2001 through FY2010, except for FY2007. However, no funds were provided for FY2011 and FY2012.

In contrast, funding for the two FS biomass energy programs—Forest Biomass for Energy and Community Wood Energy Program—has been minimal.¹⁶ Discretionary funding of \$12 million annually was authorized to be appropriated for FY2009-FY2012 for the Forest Biomass for Energy program; however, no funding has been appropriated through FY2012. Discretionary funding of \$5 million annually for the Community Wood Energy Program was authorized to be appropriated for FY2009-FY2012. No funding was appropriated for this program between FY2009 and FY2012; however, the FS awarded \$49 million in funding from the American Recovery and Reinvestment Act of 2009 (ARRA, P.L. 111-5) for wood-to-energy projects, and the appropriations committee reports for FY2010 and FY2011 directed that \$5 million in Hazardous Fuels be used to fund biomass energy projects. The sustained level of funding authorized to be appropriated, although not appropriated, reflects some interest in fuel reduction, particularly on federal lands for wildfire protection, combined with the desire to produce renewable energy and transportation fuels. Additionally, the FY2012 appropriations law provided the FS with \$5 million under the hazardous fuels line item for biomass grants through the Woody Biomass Utilization Grant Program. While some renewable and bioenergy programs allow biomass fuels from federal lands, others restrict such use.¹⁷

¹⁶ For more information, see CRS Report R41985, *Renewable Energy Programs and the Farm Bill: Status and Issues*, by Randy Schnepf.

¹⁷ See CRS Report R40529, *Biomass: Comparison of Definitions in Legislation Through the 111th Congress*, by Kelsi Bracmort and Ross W. Gorte.

Table 3. Historic Federal Funding to Assist in Protecting Non-Federal Lands and for Other Purposes, FY1999-FY2007

(\$ in millions; includes emergency appropriations)

	FY1999	FY2000	FY2001	FY2002	FY2003	FY2004	FY2005	FY2006	FY2007
FS, Wildfire Mgt.	0.0	0.0	108.5	77.1	79.4	59.2	48.1	53.6	54.0
<i>State Fire Assistance</i>	0.0	0.0	52.9	56.4	66.3	51.1	40.2	45.8	46.2
<i>Volunteer Fire Asst.</i>	0.0	0.0	8.3	8.3	8.2	8.1	7.9	7.8	7.8
<i>Economic Action</i>	0.0	0.0	12.5	12.5	5.0	0.0	0.0	0.0	0.0
<i>Community Asst.</i>	0.0	0.0	34.9	0.0	0.0	0.0	0.0	0.0	0.0
DOI Rural Assistance	0.0	0.0	10.0	10.0	9.9	9.9	9.9	9.9	0.0
Total Wildfire Funds	0.0	0.0	118.5	87.1	89.3	69.1	58.9	63.4	54.0
Forest Service, S&PF	22.9	27.2	29.9	30.4	30.5	63.3	38.8	38.8	38.8
<i>State Fire Assistance</i>	20.9	23.9	24.9	25.3	25.5	58.2	32.9	32.9	32.9
<i>Volunteer Fire Asst.</i>	2.0	3.2	5.0	5.1	5.0	5.0	5.9	5.9	5.9
Total Assistance for Non-Federal Lands	22.9	27.2	148.5	117.5	119.8	132.4	97.8	102.2	92.8
FS, Wildfire Mgt.	0.0	0.0	71.8	67.6	47.9	54.6	54.3	55.3	55.3
<i>Joint Fire Science</i>	0.0	0.0	0.0	8.0	7.9	7.9	7.9	7.9	7.9
<i>Fire research</i>	0.0	0.0	16.0	27.3	21.3	22.0	21.7	22.8	22.8
<i>Fire facilities</i>	0.0	0.0	43.9	20.4	1.8	0.0	0.0	0.0	0.0
<i>Forest health</i>	0.0	0.0	12.0	12.0	16.8	24.7	24.7	24.6	24.6
DOI	9.0	13.3	38.0	27.8	20.2	20.1	20.1	13.6	11.7
<i>Joint Fire Science</i>	4.0	4.0	8.0	8.0	7.9	7.9	7.9	5.9	4.0
<i>Fire facilities</i>	5.0	9.3	30.0	19.8	12.3	12.2	12.2	7.7	7.7
Total Wildfire Funds for Other Purposes	9.0	13.3	109.8	95.4	68.1	74.7	74.4	68.9	67.0

Source: Annual agency budget justifications.

Table 4. Recent Federal Funding to Assist in Protecting Non-Federal Lands and for Other Purposes, FY2008-Present

(\$ in millions)

	FY2008	FY2009^a	FY2010	FY2011 Enacted^b	FY2012 Appropriations
FS, Wildfire Mgt.	210.8	314.0	80.3	78.9	67.0
<i>State Fire Assistance</i>	203.0	250.0	71.3	64.9	55.6
<i>Volunteer Fire Asst.</i>	7.9	9.0	9.0	9.0	6.4
<i>Biomass Energy Programs</i>	0.0	55.0	5.0	5.0	5.0
DOI Rural Assistance	5.9	7.0	7.0	0.0	0.0
Total Wildfire Funds	216.7	321.0	87.3	78.9	67.0
Forest Service, S&PF	38.5	41.0	46.1	39.0	36.5
<i>State Fire Assistance</i>	32.6	35.0	39.1	32.4	30.5
<i>Volunteer Fire Asst.</i>	5.9	6.0	7.0	6.7	6.7
Total Assistance for Non-Federal Lands	255.3	362.1	133.4	117.9	103.5
FS, Wildfire Mgt.	69.3	59.1	64.1	64.0	53.3
<i>Joint Fire Science</i>	7.9	8.0	8.0	8.0	7.3
<i>Fire research</i>	23.5	23.9	23.9	23.9	21.7
<i>Fire facilities</i>	14.0	0.0	0.0	0.0	0.0
<i>Forest health</i>	23.9	27.2	32.2	32.1	24.3
DOI	12.0	12.1	12.1	12.1	12.1
<i>Joint Fire Science</i>	5.9	6.0	6.0	6.0	6.0
<i>Fire facilities</i>	6.1	6.1	6.1	6.1	6.1
Total Wildfire Funds for Other Purposes	81.3	71.2	76.0	76.1	65.4

Source: Annual agency budget justifications and conference agreements on P.L. 110-116, P.L. 110-161, P.L. 110-329, P.L. 111-5, P.L. 111-8, P.L. 111-88, and P.L. 112-74.

a. Includes funding in P.L. 111-5, the American Recovery and Reinvestment Act of 2009—\$200.0 million in FS State Fire Assistance and \$50.0 million in Biomass Energy Programs—although the funds could be spent in FY2009 or FY2010.

b. Includes 0.2% across-the-board reduction.

Other Fire Funding

Wildfire appropriations are also provided for several other activities, including wildfire research, construction and maintenance of fire facilities, and forest health management, as shown in **Table 3** and **Table 4**. Wildfire funds for fire research have been enacted for both DOI and the FS for the Joint Fire Science program. For FY2012, the appropriations law reduced the FS funding by 9%. The FS also has been appropriated wildfire funds for fire plan research and development, beginning in FY2001 and averaging more than \$22 million annually; for FY2012, the appropriations law provided \$22 million. These funds supplement monies for wildfire research in the FS research account, but the amount of FS research funding for wildfire research is not specified.

Both DOI and the FS have received funds to improve deteriorating fire facilities. The BLM long used a portion of its fire preparedness funds for “deferred maintenance and capital improvements” (i.e., for fire facilities), but the level fluctuated. DOI’s FY2012 appropriation for fire facilities matched the annual appropriations of \$6 million for FY2008 through FY2011. FS wildfire funds for fire facilities declined after the initial \$43.9 million in FY2001 and ended in FY2004, except for \$14.0 million of emergency funds in FY2008. The FS also builds and maintains fire facilities with its capital construction and maintenance account, but the portion used for fire facilities is unknown.

Finally, the FS has received wildfire funds for forest health management. This S&PF program focuses on assessing and controlling insect and disease infestations on federal and cooperative (i.e., non-federal) lands, but includes efforts to control invasive species. In FY2001 and FY2002, the FS received nearly \$12 million annually in wildfire funds for forest health management. Appropriations rose to nearly \$25 million in FY2004, and have generally remained near that level. For FY2010 and FY2011, appropriations rose to \$32 million of wildfire funding for forest health management, but FY2012 appropriations dropped to \$24.3 million.

Fire Funding Issues

Four issues related to wildfire funding have arisen in the last few years. The one receiving the most congressional attention is the high cost of wildfire management and its effect on other aspects of federal land management. Another issue is the level of fire protection funding to reduce fuel loads on federal lands. A third, related issue is the federal role in fire protection of non-federal lands and structures, and the funding of the relevant federal activities. During the 109th Congress and again recently, a fourth issue was raised, about post-fire rehabilitation.

Wildfire Management Costs

Federal costs for wildfire management are substantially higher than they were in the 1990s, as shown in **Figure 2**. Federal wildfire appropriations averaged \$1.1 billion for FY1994-FY1999, and ranged from \$772 million to \$1.4 billion. For FY2004-FY2009, federal wildfire appropriations averaged \$3.4 billion—more than three times above the FY1994-FY1999 average—and ranged from \$2.7 billion to \$4.5 billion. (The data are not adjusted for inflation.) Furthermore, the higher costs seem to be continuing, since FY2008 and FY2009 had the highest wildfire funding in history. This has been followed by lower FY2010, FY2011, and FY2012 appropriations, but funding has not declined as much as the decline in area burned.

Management costs have risen in response to increasingly severe wildfire seasons, as shown in **Figure 1**. The average acreage burned was 3.32 million acres annually for 1990-1999 and 6.93 million acres annually for 2000-2009.¹⁸ The six biggest fire seasons of the past 50 years—2000, 2002, 2004, 2005, 2006, and 2007—have occurred in the past decade. The threat of severe wildfires and the costs of fire protection have grown because many forests have unnaturally high amounts of biomass to fuel the fires (discussed further below). Increased costs have also been attributed to the increasing numbers of homes and people in and near forests—the *wildland-urban*

¹⁸ Acreage burned is a common measure to assess fire season severity, but larger fires are not necessarily “worse” if they burn less intensely, because their damages may be lower. However, fire intensity and damages are not measured consistently, and thus cannot be used to gauge the severity of a fire season. It is unknown whether acreage burned might provide a reasonable approximation of fire season severity.

interface.¹⁹ As more people and valuable homes are exposed to wildfire threats, the costs to suppress wildfires to protect those people and houses rises substantially.

Wildfire management has also become relatively more important for the agencies. In addition to the absolute rise in wildfire management costs, a greater share of discretionary appropriations have been spent on wildfire management in recent years. For FY1993-FY2000, wildfire management appropriations were 25% of discretionary appropriations for the FS, ranging from 16% in FY1993 to 30% in FY1997.²⁰ However, for FY2003 through FY2011, wildfire management funding averaged 47% of discretionary FS appropriations, ranging from 42% in FY2006 to 56% in FY2008. (The FY2012 appropriations law provided 45% of discretionary funding for FS wildfire management.) Concerns have focused on the continued high costs of wildfire management, especially of fire suppression expenditures, and on the indirect effects of those high costs on other agency management programs.

Continued High Costs

Numerous organizations have examined wildfire suppression costs and made recommendations to the agencies for how to contain those costs.²¹ These reports present three general conclusions: (1) a fair share of wildfire suppression should be paid by state and/or local governments; (2) more, better, and better-focused fuel reduction efforts are needed (discussed below); and (3) better accountability for cost control is needed.

Several reports have noted that wildfire suppression cost-share agreements are inconsistent and inequitable, and that cost apportionment and responsibilities among the various levels of government are unclear. This has led to increasing reliance by homeowners and local governments on federal fire protection, despite the relatively clear direction in the 1995 federal fire policy review to increase local responsibility for wildfire protection and suppression for non-federal lands and structures.²² The reports note that significant local cost responsibility is necessary to give incentives to homeowners and local governments to take actions to protect themselves, and that without such incentives, federal costs will continue to escalate.

The reports also discuss the need for better cost control and accountability. Most have noted the inconsistent cost tracking and the weak measures of the benefits of fire suppression efforts. GAO noted:²³

the agencies need to establish clear goals, strategies, and performance measures to help contain wildland fire costs. Although the agencies have taken certain steps to help contain wildland fire costs, the effectiveness of these steps may be limited because agencies have not established

¹⁹ See CRS Report RS21880, *Wildfire Protection in the Wildland-Urban Interface*, by Ross W. Gorte and Kelsi Bracmort.

²⁰ CRS calculations from data in the annual FS budget justifications.

²¹ The organizations' reports include GAO, *Cohesive Strategy Needed*; GAO, *Wildland Fire Management: Lack of a Cohesive Strategy Hinders Agencies' Cost-Containment Efforts*, GAO-07-427T (Washington, DC: January 30, 2007), 13 p.; and more than a dozen other GAO reports; National Academy on Public Administration, *Wildfire Suppression: Strategies for Containing Costs* (Washington, DC: September 2002), 2 volumes; Strategic Issues Panel on Fire Suppression Cost, *Large Fire Suppression Costs: Strategies for Cost Management, A Report to the Wildland Fire Leadership Council* (August 26, 2004), available at <http://www.forestsandrangelands.gov/reports/documents/2004/costmanagement.pdf>, hereinafter cited as *Large Fire Suppression Costs: Strategies for Cost Management*; and U.S. Dept. of Agriculture, Office of Inspector General, Western Region, *Audit Report: Forest Service Large Fire Suppression Costs*, Rept. No. 08601-44-SF (November 2006), 47 p.

²² U.S. Dept. of the Interior and Dept. of Agriculture, *Federal Wildland Fire Management Policy & Program Review: Final Report* (Washington, DC: December 18, 1995).

²³ Senate ENR, *Hearing on Wildfire Suppression Costs*, p. 15.

clear cost containment goals for the wildland fire program, including how containing costs should be considered in relation to other wildland fire program goals such as protecting lives, resources, and property; strategies to achieve these goals; or effective performance measures to track their progress.

Another part of cost control and accountability is integrating wildfire management in land and resource planning and in budgeting. One aspect of this integration is maintaining local capacity for initial attack on new wildfires. Most of the reports assert that, without that local capacity, new fires could grow into additional conflagrations if resources are too focused on suppressing current large fires. However, the very high cost of implementing this vision (essentially the 10-acre policy of the 1920s) and lack of evidence of the benefits led the agencies to abandon this approach for wildfire planning in the 1970s.

This leads to questions about the effectiveness of fire suppression. The Strategic Issues Panel noted that the high cost of large fires was the result of the “unwillingness to take greater risks, unwillingness to recognize that suppression techniques are sometimes futile, the ‘free’ nature of wildland fire suppression funding, and public and political expectations.”²⁴ FS policy results in fire managers generally not being held accountable for “excess” spending on fire control or for fire damages if they clearly put forth valiant efforts to control the conflagration. However, they are blamed for fire damages if the fire control efforts are seen as insufficient—too few people, too little equipment, not enough air tanker drops, or similar problems. The Strategic Issues Panel recommended better fire cost data and “a benefit cost measure as the core measure of suppression cost effectiveness.”²⁵

Indirect Effects on Agency Programs

Wildfire suppression appropriations—including emergency supplemental funding—exceeded \$1 billion for the first time in FY2001, and have remained above \$1 billion annually since FY2003, exceeding \$2.4 billion in FY2008. Furthermore, wildfire suppression expenditures have exceeded agency appropriations annually for more than a decade. How can an agency spend more than its appropriations? In most situations, it can’t. However, provisions in the annual Interior appropriations acts authorized DOI and the FS to borrow unobligated funds from other accounts for emergency firefighting. This, in effect, was an open-ended reprogramming authority.

Historically, the authority to borrow funds from other accounts was not a significant problem. The FS has several mandatory spending accounts, funded primarily from timber receipts; prior to 1990, several of these accounts had substantial running balances. One, the Knutson-Vandenberg (K-V) Fund, was particularly useful, since it had a running balance of about \$500 million (about three years of spending).²⁶ Firefighting funds could be borrowed from the K-V Fund (or other accounts), and repaid later with regular or supplemental appropriations, without a significant effect on agency activities, such as reforestation. The decline in timber sales since 1990 has led to a comparable decline in K-V (and other mandatory spending account) balances, and thus the FS has had to turn to other accounts to borrow funds to pay for firefighting.

Another reason why the borrowing authority was not a problem historically is that, prior to FY2000, there were more discretionary funds to borrow. As noted above, FY1993-FY2000

²⁴ *Large Fire Suppression Costs: Strategies for Cost Management*, p. 6.

²⁵ *Large Fire Suppression Costs: Strategies for Cost Management*, p. 33.

²⁶ The Act of June 9, 1930 (16 U.S.C. §§576-576b), authorizes the FS to require deposits from timber purchasers to cover the cost of reforestation, timber stand improvement, and other resource mitigation and enhancement of timber sale areas. See CRS Report RL30335, *Federal Land Management Agencies’ Mandatory Spending Authorities*, coordinated by Ross W. Gorte.

wildfire management appropriations averaged 25% of discretionary FS appropriations for the FS, leaving significant funds in other accounts to borrow from. (This is less of an issue for DOI, since it can borrow from any DOI accounts.) However, since FY2001, fire management expenditures have averaged 47% of discretionary FS appropriations, and totaled 56% of FS discretionary appropriations in FY2008. Thus, there were relatively fewer funds available to borrow, and borrowing to pay for firefighting was having a relatively greater effect on those other accounts. Various interests increasingly expressed concerns about the effects of firefighting borrowing on the agencies' abilities to implement other programs.

Legislation was introduced to address the situation. Freestanding bills in the 110th and 111th Congresses sought to establish a separate fund for major wildfire suppression efforts. One, the Federal Land Assistance, Management and Enhancement (FLAME) Act, was enacted in Title V of P.L. 111-88. It established separate FLAME Wildfire Suppression Reserve Funds for the FS and DOI, to be funded from annual appropriations. The FLAME funds can be used if the Secretary declares that (1) an individual wildfire covers at least 300 acres or threatens lives, property, or resources, or (2) cumulative wildfire suppression and emergency response costs will exceed, within 30 days, appropriations for wildfire suppression and emergency responses. It also directed the Secretaries to report annually on use of the funds, and to report on estimated suppression costs periodically through the year. The funds terminate if there have been no appropriations to or withdrawals from the accounts for three consecutive fiscal years. In addition, the FLAME Act required the agencies to prepare a "cohesive wildland fire management strategy" as recommended by the GAO, and to revise the cohesive strategy at least every five years.²⁷

The FLAME funds effectively insulate federal land and resource management programs from the financial impacts of borrowing to pay for wildfire suppression efforts. However, they do not reduce the effects of lost resource management time when agency personnel are assigned to wildfire suppression efforts. In addition, this approach offers no incentives to fire managers to reduce or constrain the costs of fire-fighting efforts, and thus is unlikely to reduce wildfire suppression costs.

Fuel Reduction Funding²⁸

Since 1990, recognition of unnaturally high fuel loads of dead trees, dense understories of trees and other vegetation, and non-native species has spurred interest in fuel management activities. This substantial fuel accumulation has been attributed to various causes: past land management practices (through grazing and logging that altered the vegetation); successful historic fire suppression (by reducing surface fires that burned small-diameter fuels); decreased logging (by reducing removals of burnable materials); climate change (by exacerbating drought and insect and disease infestations and raising ambient air temperatures); and other factors that affect the ecological health of forests.²⁹ **Table 5** shows the acreage, by ownership class, of lands at low, moderate, and high risk of significant ecological damage from wildfire due to high fuel loads.

²⁷ As enacted in P.L. 111-88, the FLAME Act did not include two provisions of H.R. 1404 and S. 561: (1) to report on each wildfire costing more than \$10 million, and (2) to authorize grants and cost-sharing agreements for "fire-ready communities" that have taken identified steps to reduce their risk from wildfires.

²⁸ See CRS Report R40811, *Wildfire Fuels and Fuel Reduction*, by Ross W. Gorte.

²⁹ See CRS Report RL30755, *Forest Fire/Wildfire Protection*, by Ross W. Gorte.

Table 5. Lands At Risk of Ecological Damage from Wildfire Due to Excessive Fuel Levels
(millions of acres)

Landowner	Total Acreage	Low Risk	Moderate Risk	High Risk
Forest Service	196.52	64.95	80.45	51.12
Dept. of the Interior	227.72	128.42	75.83	23.47
Other federal, state, & private lands	825.01	404.60	313.54	107.18
Total	1,249.25	597.97	469.82	181.77

Source: Kirsten M. Schmidt et al., *Development of Coarse-Scale Spatial Data for Wildland Fire and Fuel Management*, Gen. Tech. Rept. RMRS-87 (Fort Collins, CO: USDA Forest Service, April 2002), pp. 13-15.

Fuel Reduction Efforts

Fuel reduction efforts, as discussed above, are commonly proposed as a means of reducing wildfire suppression costs. Fuel management is a collection of activities—primarily prescribed burning and thinning—intended to reduce the threat of significant damages by wildfires. Fuel treatment acreage increased after the mid-1990s. (Earlier data were not reported comparably.) **Table 6** shows that the acreage treated from FY1995 to FY2004 increased by 400%. However, treatment acreage fell in FY2005 and again in FY2006, and has not been proposed to return to the FY2004 level. Data on treatments since FY2007 are not included in **Table 6**, because the FS and DOI revised their reporting systems to include acreage of *wildland fire use* (natural wildfires that are allowed to burn within the prescriptions of fire plans) as fuel treatments; previous data did not include wildland fire use acreage.

Fuel reduction may have increased in FY2008 and FY2009, as funding (including under the economic stimulus legislation) continued to rise. (See **Table 1** and **Table 2**.) However, the annual fuel treatment acreage appears to have stabilized at less than 3 million acres annually, which is less than 1% of federal lands. At this average treatment level, it would take nearly 25 years to treat the FS and DOI lands at high risk of ecological damage from wildfire, and another 52 years to treat the lands at moderate risk. Furthermore, the FY2010 and FY2011 appropriations for fuel reduction were below the FY2008 and FY2009 levels, and the FY2012 appropriations is lower than any funding level since FY2004.

Table 6. Total Acreage of Fuel Treatment, FY1995-FY2008
(thousands of acres)

	FY1995	FY1996	FY1997	FY1998	FY1999	FY2000	FY2001
FS	541.3	599.5	1,097.7	1,489.3	1,280.0	772.0	1,361.7
DOI	57.0	298.0	474.0	632.0	827.8	1,020.0	728.1
Total	598.3	897.5	1,571.6	2,121.3	2,107.8	1,792.0	2,089.8
	FY2002	FY2003	FY2004	FY2005	FY2006	FY2007 Planned	FY2008 Proposed
FS	1,257.9	1,453.3	1,803.8	1,663.9	1,454.7	1,750.0	1,800.0
DOI	1,059.0	1,258.8	1,205.9	1,269.4	1,106.1	1,055.0	1,061.0
Total	2,316.9	2,712.2	3,064.7	2,933.3	2,560.8	2,805.0	2,861.0

Source: Annual agency budget justifications. The agencies no longer report fuel treatment on the same basis, and thus actual treatments since FY2007 cannot be shown.

Funding might not be the only limiting factor for fuel treatment. Increasing fuel reduction activities was one of the primary rationales for enacting the Healthy Forests Restoration Act of 2000 (HFRA; P.L. 108-148). Many observers described the need for expeditious action to reduce fuel loads and fuel ladders,³⁰ and the difficulties in achieving expeditious action because of the environmental documentation and public participation required by the National Environmental Policy Act of 1969 (NEPA; P.L. 91-190, 42 U.S.C. §§4321-4347). HFRA established an expedited process for environmental review and public involvement in fuel reduction activities. In addition, the FS and DOI established categorical exclusions (CEs) from NEPA for hazardous fuel reduction activities; however, in December 2007, the Ninth Circuit Court of Appeals ruled that the CE violated NEPA, and stopped the use of that CE until NEPA had been followed.³¹ It is unclear how much fuel reduction has occurred under either of these authorities. Some oppose expedited actions with limited public oversight, fearing the potential for commercial harvests of large trees (which might provide little or no wildfire protection) and the associated road construction disguised as fuel reduction.

Others have suggested focusing fuel treatment in the wildland-urban interface (WUI), to enhance protection of homes and other structures. The proportion of fuel treatments in the WUI increased after FY2001 (the first year for which such data are available), from 37% (45% for the FS, 22% for DOI) to about 60% from FY2003 to FY2006 (73% for the FS, 42% for DOI), and 70% in FY2008 (83% for the FS, 47% for DOI). Research has documented that reducing fuels close to structures (within about 131 feet) is essential to protecting those structures from wildfire, but that fuel reduction beyond that close-in area (about 2 acres) provides no additional protection for structures.³²

In addition, GAO testified that the agencies still needed to:³³

develop a cohesive strategy that identifies the options and associated funding to reduce fuels and address wildland fire problems.... In 2005 and 2006, because the agencies had not yet developed one, GAO reiterated the need for such a strategy but broadened its focus to better address the interrelated nature of fuel reduction efforts and wildland fire response.

The presumption behind fuel treatment is that lower fuel loads and a lack of fuel ladders will reduce the extent of wildfires, the damages they cause, and the cost of controlling them. Numerous on-the-ground anecdotes support this belief. However, little empirical research has documented this presumption. As noted in one research study, “scant information exists on fuel treatment efficacy for reducing wild-fire severity.”³⁴ This study also found that “fuel treatments moderate extreme fire behavior within treated areas, at least in” frequent fire ecosystems. Others have found different results elsewhere; one study reported “no evidence that prescribed burning in these [southern California] brushlands provides any resource benefit ... in this crown-fire ecosystem.”³⁵ A recent summary of wildfire research reported that, although prescribed burning

³⁰ A *fuel ladder* is a stand structure with continuous fuels, in the form of tall grasses and forbs, shrubs, and low branches, between the ground and the tree crowns that allow surface fires to spread upward.

³¹ *Sierra Club v. Bosworth*, 510 F.3d 1016 (9th Cir. 2007).

³² See CRS Report RS21880, *Wildfire Protection in the Wildland-Urban Interface*, by Ross W. Gorte and Kelsi Bracmort.

³³ U.S. Congress, Senate Energy and Natural Resources, *Cost of Wildfire Suppression*, 110th Cong., 1st sess., January 30, 2007, S.Hrg. 110-11 (Washington: GPO, 2007), pp. 16-17.

³⁴ Philip N. Omi and Erik J. Martinson, *Effects of Fuels Treatment on Wildfire Severity: Final Report*, submitted to the Joint Fire Science Program Governing Board (Fort Collins, CO: Colorado State University, Western Forest Fire Research Center, March 25, 2002).

³⁵ Jon E. Keeley, “Fire Management of California Shrubland Landscapes,” *Environmental Management*, vol. 29, no. 3

generally reduced fire severity, mechanical fuel reduction did not consistently reduce fire severity, and that limited research had examined the potential impacts of mechanical fuel reduction with prescribed burning or of commercial logging.³⁶ Thus, it is unclear whether, or to what extent, increasing fuel treatment funding and efforts will protect communities and ecosystems from damaging wildfires.

Biomass Fuels for Energy

Some have suggested combining the need to reduce potentially hazardous biomass fuels from the forest with the desire to produce renewable energy. Biomass can be used to produce liquid transportation fuels (e.g., ethanol) or to produce heat and electricity (most commonly through co-generation, also known as combined-heat-and-power). In either case, virtually any biomass can be used to supplant fossil fuels for energy production, and could provide a beneficial use for the fuels that need to be removed from forests.

Some FS fuel reduction funds have been used for wood energy programs. For FY2009-FY2011, \$5 million annually was used for biomass grants, authorized in Title II of the Healthy Forests Restoration Act (P.L. 108-148). For FY2011, the Administration proposed, but Congress did not fund, \$5 million for the Community Wood Energy Program and \$15 million for the Forest Biomass to Energy Program, two programs established in the 2008 farm bill (P.L. 110-246). These programs can contribute to fuel reduction for federal forests, since they provide markets for the fuels to be removed, but they are not limited to woody biomass from federal lands, and are also likely to be used to remove woody biomass from non-federal lands. Furthermore, this relatively limited funding provides very modest markets for the substantial volumes of biomass to be removed from federal lands.

Other federal programs exist to provide incentives for renewable energy production, including from biomass.³⁷ However, some prohibit the use of biomass from federal lands for the renewable energy targets and incentives.³⁸ This is due at least partly to concerns about diverting federal woody biomass from traditional markets—lumber, plywood, and pulp and paper—to renewable energy markets. The validity of such concerns was illustrated by the initial payments under USDA's Biomass Crop Assistance Program (BCAP). While the goal was, in part, to stimulate removal of woody biomass waste from the forest, much of the initial funding was spent on transporting wood waste from existing wood production facilities (e.g., sawmills) to energy production facilities; previously such wood waste was sold to pulp mills, particleboard plants, and other such users who were unable to compete against the BCAP subsidies for wood-waste-to-energy.³⁹ The principal difficulty in using woody biomass from forests is that, while the fuel loads might be very high by historical standards in some ecosystems, they are widely scattered and highly diverse in size and structure, making collection and transport very expensive.

(2002), pp. 395-408.

³⁶ Henry Carey and Martha Schumann, *Modifying WildFire Behavior—The Effectiveness of Fuel Treatments: The Status of Out Knowledge*, Southwest Region Working Paper 2 (Santa Fe, NM: National Community Forestry Center, April 2003).

³⁷ See CRS Report RL34130, *Renewable Energy Programs in the 2008 Farm Bill*, by Randy Schnepf; and CRS Report R41106, *Meeting the Renewable Fuel Standard (RFS) Mandate for Cellulosic Biofuels: Questions and Answers*, by Kelsi Bracmort.

³⁸ See CRS Report R40529, *Biomass: Comparison of Definitions in Legislation Through the 111th Congress*, by Kelsi Bracmort and Ross W. Gorte.

³⁹ See USDA Commodity Credit Corporation, "Biomass Crop Assistance Program: Proposed Rule," *Federal Register*, v. 75, no. 25 (February 8, 2010), http://www.fsa.usda.gov/Internet/FSA_Federal_Notices/bcap_prm_2_8_2010.pdf.

Federal Role in Protecting Non-Federal Lands

The states are responsible for protecting non-federal lands from wildfires, but FS cooperative fire assistance to states has been authorized since the Clarke-McNary Act of 1924. Cooperative fire assistance was questioned during the Reagan, George H. W. Bush, and Clinton Administrations, with budget proposals to substantially reduce funding (generally to less than 30% of enacted appropriations) from FY1984 through FY1995.

The debate over the federal role in assisting states shifted following the severe fire season in summer of 1994. The *Federal Wildland Fire Management Policy & Program Review: Final Report*, released in December 1995, altered federal fire policy from priority for private property to equal priority for private property and federal resources, based on values at risk. (Protecting human life remains the first priority in firefighting.) The increased emphasis on state and local responsibility for protecting non-federal lands also led to a recognition of the importance of federal assistance to state and local agencies. (Sharing fire suppression costs with state and local governments is discussed above, under “Wildfire Management Costs.”)

In contrast to White House efforts to cut fire assistance funding in the 1980s and early 1990s, federal funding for state and volunteer fire assistance more than tripled in 2001, rising from \$27 million to \$91 million, pulled along by the broad rise in federal wildfire funding under the National Fire Plan. (See **Table 3**.) State and volunteer fire assistance funding continued to rise for a few years, peaking at \$314 million in FY2009, including the funding in the economic stimulus legislation.

The 2002 farm bill (P.L. 107-171, the Farm Security and Rural Investment Act of 2002) authorized a new fire assistance program, the Community Fire Protection Program. The program authorizes the FS, working with and through state forestry agencies, to assist local fire protection planning, education, and activities. The program was authorized at \$35 million annually for FY2002-FY2007, and “such sums as are necessary” thereafter; to date, no explicit budget line items have been enacted for this program.

Questions persist about the appropriate role of federal firefighters and funds in protecting structures, communities, and privately owned resources.⁴⁰ States bear the responsibility for fire protection on all non-federal lands. The FS and others also support the FIREWISE program to educate landowners and communities about how to protect their properties and structures from wildfire. The National Interagency Fire Center coordinates the movement of firefighting forces (federal, state, and private contractors) to areas with lots of wildfires. The federal agencies are also directed to give “excess personal property” (such as surplus firefighting equipment) to state or local fire departments. Some question whether these programs are sufficient; others suggest that perhaps federal financial assistance could be terminated. Still others question federal firefighting actions, where state or local responsibility for structure fires has been used as an excuse for inaction.⁴¹ On the other hand, federal firefighters are not trained to fight structure fires, and such efforts without proper training might endanger the firefighters, it has been argued.

⁴⁰ See CRS Report RL34517, *Wildfire Damages to Homes and Resources: Understanding Causes and Reducing Losses*, by Ross W. Gorte, and CRS Report RS21880, *Wildfire Protection in the Wildland-Urban Interface*, by Ross W. Gorte and Kelsi Bracmort.

⁴¹ At least two houses on the Standing Rock Indian Reservation burned down in the summer of 2006, because firefighters of the Bureau of Indian Affairs apparently were not allowed to fight fires in private dwellings, only grassland fires and government structure fires; the policy was modified in July 2006 (“Dorgan: BIA Changing Policy on Standing Rock Fires,” *Associated Press*, July 15, 2006).

The appropriate federal response following wildfire damages to private lands and resources has also been questioned. Catastrophic wildfires sometimes lead to disaster declarations, and thus to recovery efforts coordinated and assisted by the Federal Emergency Management Agency (FEMA) of the Department of Homeland Security. Wildfire damages not in declared disaster areas are sometimes, but not always, covered by private insurance (which is regulated by the states). Homeowners without fire insurance or whose fire insurance does not cover wildfires may be left without compensation for their losses. Similarly, landowners with resource losses (e.g., many trees killed by wildfire) may receive no compensation or recovery assistance. It seems unfair to some that wildfire damages are substantially covered only when total damages are sufficient to declare the area a disaster. To address these concerns, some have suggested that the National Flood Insurance Program might provide a model for federal wildfire insurance for private landowners.⁴² Others assert that private insurance exists and is more efficient than a government insurance program, and that the National Flood Insurance Program has not prevented building in flood zones or repetitive flood losses, despite these being among its goals.

Post-Fire Rehabilitation

Rehabilitation of burned sites following intense wildfires has been a generally accepted practice. As shown in **Table 1** and **Table 2**, the DOI has traditionally received modest appropriations for rehabilitation of DOI lands, except in FY2001; in contrast, the FS has generally funded burned area rehabilitation from regular appropriations for vegetation management, wildlife habitat, watershed management, and other accounts, with modest appropriations (less than \$13 million annually) for rehabilitation except in FY2001, FY2002, and FY2008.

Attention to post-fire rehabilitation has increased since 2000. The Bush Administration finalized regulations authorizing NEPA categorical exclusions for post-fire rehabilitation activities affecting up to 4,200 acres in June 2003.⁴³ These (and other) regulations were successfully challenged as violating the Forest Service Decision Making and Appeals Reform Act (§322 of P.L. 102-381; 16 U.S.C. §1612 note), and the FS suspended many proposed actions in response to the court's order.⁴⁴

Legislation was introduced relating to post-fire rehabilitation in the 109th Congress. One bill that passed the House (H.R. 4200, the Forest Emergency Recovery and Research Act of 2006) would have directed the FS and BLM to establish research protocols for catastrophic events affecting forests, to provide an expedited process for recovery of forests from catastrophic events, and to authorize financial assistance to restore landscapes and communities affected by catastrophic events. The expedited process would have required catastrophic event recovery assessments, with pre-approved management practices and alternative NEPA arrangements, and foreshortened administrative and judicial reviews of related activities. The bill has not been introduced in subsequent Congresses.

More recently, other bills have proposed national or regional post-fire and other forest restoration programs with modified procedures for assessing and implementing practices. The Collaborative Forest Landscape Restoration Act was included as Title IV in the Omnibus Public Lands Management Act of 2009 (P.L. 111-11). It provides a collaborative (diverse, multi-party) process for geographically dispersed, long-term (10-year), large-scale (at least 50,000-acre) strategies to restore forests, reduce wildfire threats, and utilize the available biomass, with multi-party

⁴² See CRS Report RS22394, *National Flood Insurance Program: Treasury Borrowing in the Aftermath of Hurricane Katrina*, by Rawle O. King.

⁴³ 68 *Fed. Reg.* 33814 (June 5, 2003).

⁴⁴ *Earth Island v. Pengilly*, 376 F.Supp. 2d 994 (E.D.Cal. 2005).

monitoring of and reporting on activities. For FY2012, the Obama Administration requested funding for this program as part of a new line item (Integrated Resource Restoration) within the National Forest System appropriation account. This request was permitted on a pilot basis. Other bills typically address specific areas or specific restoration needs.

Post-fire rehabilitation needs and funding have arisen again in the 112th Congress, in the wake of the worst wildfire in Arizona history. Attention is being given to the burned area emergency response (BAER) program—authorized activities, funding mechanisms, public involvement, and more. To date, no legislation has been introduced, nor have any oversight hearings been held or scheduled. Nonetheless, given the importance of the process and the concerns about conditions, the BAER program may receive congressional consideration in the 112th Congress.

No data or assessments have examined the adequacy of current rehabilitation activities. It is unclear how often rehabilitation activities are necessary or feasible. It is also unclear whether NEPA environmental reviews or public involvement have delayed rehabilitation activities significantly. Opponents of legislated changes to existing environmental review and public involvement processes have expressed concerns that changes could reduce review and oversight of salvage logging decisions, since salvage logging is not generally precluded as a rehabilitation activity. They note that salvage logging can cause significant environmental damage. Proponents of changes contend that timber salvage can help in site rehabilitation, both by reducing costs and by removing dead biomass that may interfere with vegetative regrowth on the site, and that expedited processes are necessary to utilize the timber before it deteriorates.

Appendix. Acres Burned and Funding Data

Table A-1 presents the data on acres burned annually in the United States since 1960. These data are presented graphically in **Figure 1**.

Table A-1. Acres Burned in Wildfires Since 1960

(millions of acres)

Year	Acres	Year	Acres	Year	Acres	Year	Acres
1960	4.48	1973	1.92	1986	2.72	1999	5.63
1961	3.04	1974	2.88	1987	2.45	2000	7.39
1962	4.08	1975	1.79	1988	5.01	2001	3.57
1963	7.12	1976	5.11	1989	1.83	2002	7.18
1964	4.20	1977	3.15	1990	4.62	2003	3.96
1965	2.65	1978	3.91	1991	2.95	2004	8.10
1966	4.57	1979	2.99	1992	2.07	2005	8.69
1967	4.66	1980	5.26	1993	1.80	2006	9.87
1968	4.23	1981	4.81	1994	4.07	2007	9.33
1969	6.69	1982	2.38	1995	1.84	2008	5.29
1970	3.28	1983	1.32	1996	6.07	2009	5.92
1971	4.28	1984	1.15	1997	2.86	2010	3.42
1972	2.64	1985	2.90	1998	1.33	2011	8.71

Source: National Interagency Fire Center, at http://www.nifc.gov/fire_info/fires_acres.htm.

Note: Data for 1983-1991 have been revised downward.

Table A-2 presents data on the total appropriations to the FS and DOI wildland fire management accounts. These data are presented graphically in **Figure 2**.

Table A-2. Total Appropriations to Wildfire Accounts, FY1994-FY2011

(\$ in millions)

	FY1994	FY1995	FY1996	FY1997	FY1998	FY1999	FY2000
FS	752.7	835.6	485.5	1,080.0	836.6	722.4	1,008.0
DOI	350.5	235.7	286.9	352.0	280.1	336.9	591.0
Total	1,103.2	1,071.3	772.4	1,432.1	1,116.7	1,059.3	1,598.9
	FY2001	FY2002	FY2003	FY2004	FY2005	FY2006	FY2007
FS	1,882.8	1,560.3	2,290.0	2,347.0	2,128.5	1,846.1	2,193.6
DOI	977.1	678.4	875.2	883.6	831.3	855.3	853.4
Total	2,859.9	2,238.8	3,165.1	3,230.6	2,929.8	2,701.4	3,047.0
	FY2008 ^a	FY2009 ^b	FY2010 ^c	FY2011 enacted ^d	FY2012 approp.		

FS	3,269.5	2,831.6	2,516.7	2,058.5	2,168.8 ^e
DOI	1,192.1	924.5	855.9	778.9	588.6
Total	4,461.5	3,756.1	3,372.6	2,837.4	2,757.4

Note: Totals in this table are the sum of totals in **Table 1**, **Table 2**, **Table 3**, and **Table 4**, excluding the wildfire assistance programs funded through FS State and Private Forestry. The numbers may not add to the total due to rounding error.

- a. Includes emergency supplemental appropriations in P.L. 110-116 (Div. B), P.L. 110-161 (Div. F, Title V), and P.L. 110-329 (Div. B), as well as regular FY2008 appropriations in P.L. 110-161.
- b. Includes supplemental appropriations in P.L. 111-32 and funds in P.L. 111-5, the American Recovery and Reinvestment Act; the latter funds, \$500.0 million for the FS and \$15.0 million for DOI, were available to be spent in FY2009 or FY2010, but are shown in FY2009 funding.
- c. Reduced by \$75.0 million of prior-year FS funds and \$125.0 million of prior-year DOI funds.
- d. Reflects rescissions of \$400.0 million for the FS and \$200.0 million for DOI, and a 0.2% across-the-board reduction.
- e. Reflects a reduction of \$192.0 million in hazardous fuels treatment and a rescission of \$192.0 million, as reported by the House Appropriations Subcommittee on Interior, Environment, and Related Agencies; the FS FY2012 budget justification does not show the \$192.0 million reduction in hazardous fuels treatment.

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